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structure such as a sheet of flexible metal in accordance with an embodiment of the present invention.

FIG. 17 is a side view of an illustrative electronic device of the type shown in FIG. 16 in which the flexible support structure and the flexible display have been bent backward to tilt a portion of the flexible display away from its planar position in accordance with an embodiment of the present invention.

FIG. 18 is a side view of an electronic device of the type shown in FIG. 16 in which the flexible display has been bent backwards sufficiently to create a viewable display portion while a portion of the display rests on a flat surface in accordance with an embodiment of the present invention.

FIG. 19 is a cross-sectional side view of an illustrative electronic device having a flexible display mounted to a flexible support structure showing how the device may be provided with engagement features such as a hook and mating notch to help hold the flexible display in a back-to-back configuration in accordance with the present invention.

FIG. 20 is a side view of an illustrative electronic device with a flexible display in which the electronic device housing has been formed from a flexible material that forms a hinge and in which rigid structures form enclosures for internal device components in accordance with an embodiment of the present invention.

FIG. 21 is a side view of an illustrative electronic device with a flexible display that has a hinge formed from a flexible housing material in which the flexible display has been placed in a face-to-face configuration in accordance with an embodiment of the present invention.

FIG. 22 is a side view of an illustrative electronic device with a flexible display that has a hinge formed from a flexible housing material in which the flexible display has been placed in a back-to-back configuration in accordance with an embodiment of the present invention.

FIG. 23 is a side view of an illustrative electronic device with at least three separate housing portions connected by at least two hinges and covered with a flexible display in accordance with an embodiment of the present invention.

FIG. 24 is a side view of an illustrative electronic device with at least three separate housing portions connected by at least two hinges and covered with a flexible display in which the portions of the device housing have been positioned to place the device in a folded configuration in accordance with an embodiment of the present invention.

#### DETAILED DESCRIPTION

An illustrative electronic device with a flexible display is shown in FIG. 1. Electronic device 10 may be a portable electronic device or other suitable electronic device. For example, electronic device 10 may be a laptop computer, a tablet computer, a somewhat smaller device such as a wrist-watch device, pendant device, headphone device, earpiece device, or other wearable or miniature device, a cellular telephone, a media player, larger devices such as desktop computers, computers integrated into computer monitors, televisions, set-top boxes or other electronic devices.

Electronic device 10 may have a flexible display such as flexible display 14. Flexible displays such as flexible display 14 may be based on electronic ink displays, organic light-emitting diode displays, or other suitable flexible displays. Arrangements in which the flexible displays in the electronic devices are formed from organic light-emitting diode displays are sometimes described herein as an example. This is,

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however, merely illustrative. Flexible display 14 may be provided using other display technologies if desired.

Device 10 may include a housing such as housing 12. Housing 12, which may sometimes be referred to as a case, may be formed of plastic, glass, ceramics, fiber composites, metal (e.g., stainless steel, aluminum, etc.), other suitable materials, or a combination of these materials. Housing 12 may be provided with features such as buttons 16, speaker ports, microphone ports, connector ports such as illustrative connector port 24, ports or other structures for accommodating sensors and antennas, or other device features.

Device 10 may include one or more displays. The displays may include one or more flexible displays such as display 14 and may include optional rigid displays (e.g., displays mounted under rigid cover glass layers and/or displays with rigid layers of display components).

Displays such as flexible display 14 of device 10 in FIG. 1 may be bent by moving portions of housing 12 with respect to each other. Housing 12 may, in general, have two or more parts that may be moved with respect to each other while bending a portion of flexible display 14. In the example of FIG. 1, housing 12 has upper portion 12A and lower portion 12B. Housing portions 12A and 12B may be coupled to each other using hinge 26, so that the relative positions of portions 12A and 12B may be adjusted by rotation of portions 12A and 12B with respect to each other. If desired, three or more pieces of housing 12 may be coupled together using hinges. Coupling mechanisms other than hinges that allow portions 12A and 12B and optional additional housing portions to move with respect to each other may also be used. The FIG. 1 arrangement in which device 10 has two housing portions that are connected using hinge structures is merely illustrative.

Hinge 26 may allow housing portion 12A to rotate relative to housing portion 12B about axis 18. Hinge 26 may, for example, allow portion 12A to rotate in direction 20 or direction 22. When rotated in direction 20, housing portion 12A may close on top of portion 12B to enclose and protect display 14. Display 14 may bend along axis 18, so axis 18 may sometimes be referred to as a bend axis, flex axis, hinge axis, or rotational axis.

Hinge 26 may allow housing portions 12A and 12B to be flattened into a planar device configuration of the type shown in FIG. 2. As shown in the side view of FIG. 2, device 10 may be placed into a configuration in which display 14 is substantially planar. In this type of arrangement, display 14 is not bent in the vicinity of hinge 26, but rather is maintained in a flat configuration in which display 14 and its outermost surface are planar. This type of position may be desirable when a user of device 10 is viewing a video, text, or graphics over all of display 14 (i.e., over all of a display surface that spans housing portions 12A and 12B).

Device 10 may include internal components 36. Components 36 may include electrical components such as display driver circuitry, one or more batteries, sensors, microphones, speakers, integrated circuits, microprocessors, power management units, radio-frequency transceiver circuitry, baseband processor circuitry, discrete components such as capacitors, resistors, and inductors, switches, vibrators, connectors, printed circuit boards, wires, transmission lines, and other electrical devices. Components 36 may be mounted on one or more substrates such as substrates 34. Substrates 34 may include rigid printed circuit boards (e.g., boards formed from fiberglass-filled epoxy such as FR4 printed circuit boards on which patterned metal traces have been formed), flexible printed circuit boards (e.g., "flex circuits" formed from sheets of polymer such as polyimide on which pat-